

PS161-6 POWER SUPPLY INSTALLATION INSTRUCTIONS

For online instructions, assistance or warranty information:
Call 1-800-392-5209 or visit
<https://dhwsupport.dormakaba.com/hc/en-us>

Overview: PS161-6 converts a 120VAC / 60Hz input, to a 12VDC or 24VDC nominal output. PS161-6 comes with a power-limited power distribution module with 8 outputs. Class 1 wiring methods and separation of circuits must be considered when connecting DC power supply to the Delayed Egress hardware.



UL Listings for US Installations:

UL 294 - UL Listed for Access Control System Units.
UL 603 - UL Listed for Power Supplies for Use with Burglar-Alarms Systems.
UL 1481 - UL Listed for Power Supplies for Fire Protective Signaling Systems.



UL Listings for Canadian Installations:

ULC-S318-96 - Power Supplies for Burglar Alarm Systems. Also suitable for Access Control.



California State Fire Marshal



European Conformity

Specifications:

Input:

Voltage: 120V AC, 60HZ
Current: 3.5A AC
Input fuse ratings: 5A/250V
Battery fuse ratings: 7.5A/32V

Output:

Voltage: 20.0-26.4V
Total output: 6 amps
Power limit/output: 2 amps/per channel
Outputs: 8 (For Delayed Egress applications: use only 4)
Ripple voltage: 910mV (Filtered and regulated outputs)
Protection: Thermal and short circuit protection with auto reset overload protection.

Battery Backup

Built-in charger for sealed lead acid or gel type batteries
Maximum charge current 1.54 amp
Automatic switch over to stand-by is instantaneous with no interruption
Enclosure Dimensions: 12.5" x 13" x 3.25" (318mm x 330.2mm x 82.55mm)

Fire Alarm Disconnect:

Supervised Fire Alarm disconnect (latching or non-latching) 10K EOL resistor.
Operates on a normally open (NO) or normally closed (NC) trigger.

Supervision

AC fail supervision (form "C" contacts).

Visual Indicators

Green AC Power LED indicates 120VAC present.

Additional Features

Short circuit and overload protection.
Unit is complete with power supply, enclosure, battery leads and cam lock.

Enclosure Dimensions

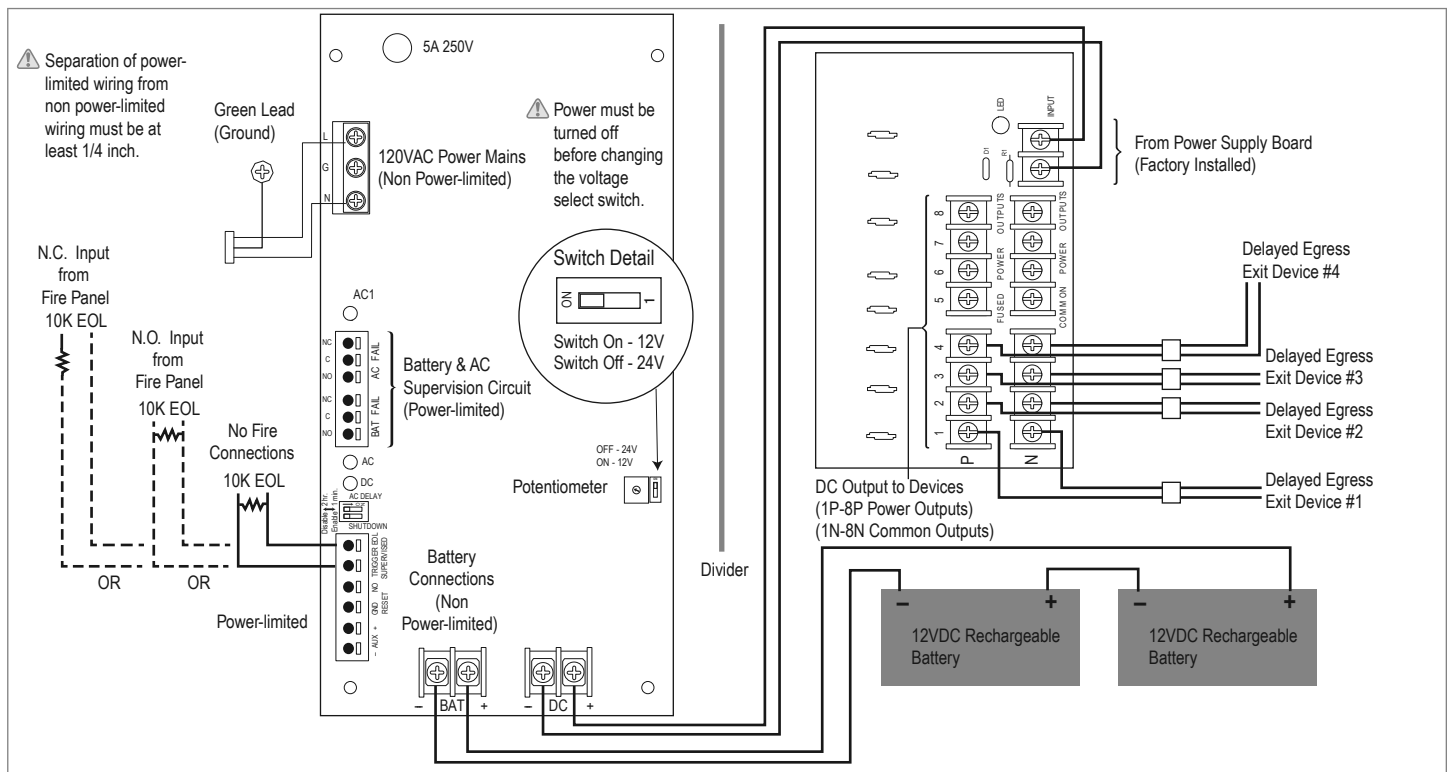
12.5" x 13" x 3.25" (318mm x 330.2mm x 82.55mm)

Installation Instructions:

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/NFPA 72/ANSI, The Canadian Electrical Code, Part 1 and with all local codes and authorities having jurisdiction. The product must be located indoors within the protected premises.

1. Mount unit in the desired location. Mark and predrill holes in the wall to line up with the top two keyholes in the enclosure. Install two upper fasteners and screws in the wall with the screw heads protruding. Place the enclosure's upper keyholes over the two upper screws, level and secure. Mark the position of the lower two holes. Remove the enclosure. Drill the lower holes and install the two fasteners. Place the enclosure's upper keyholes over the two upper screws. Install the two lower screws and make sure to tighten all screws (Enclosure Dimensions, pg. 8).
2. Secure enclosure to earth ground.
Set the DC output voltage to 24DC by setting SW1 to the open position on the power supply board (Figure 2-1a).
3. Connect unswitched AC power [120VAC 60Hz] to terminals marked [L, N] (Figure 1). Use 18 AWG for all power connections and 18 AWG to 22 AWG for power limited circuits [AC Fail/Low Battery reporting]. Secure green wire lead to earth ground. Keep power-limited wiring separate from non power-limited wiring [120VAC 60Hz Input, Battery Wires]. Minimum 0.25" spacing must be provided.
4. Measure output voltage before connecting devices. This helps avoid potential damage.
5. Connect the delayed egress exit device locking hardware positive leads to terminals marked 1 through 4 POS (+) on the PD8ULCB board and negative leads to the NEG 1 terminals through 4 terminals.

Figure 1 - Wiring Diagram for Connecting DE Exit Devices to a PS161-6 Power Supply



Note A 10k EOL (End of Line) Resistor must be installed across terminals marked (Trigger EOL Supervised) on the PS161-6 board or the unit will remain in fire alarm condition.

7. For Access Control applications batteries are optional. When batteries are not used, a loss of AC will result in the loss of output voltage. Batteries must be lead acid or gel type if used. Use two 12VDC batteries connected in series for 24VDC operation (Battery leads included).
8. Connect battery to terminals marked [-- BAT +] (Figure 2 - 1g). Use two (2) 12VDC batteries connected in series for 24VDC operation (battery leads included). Use batteries - Casil CL1270 (12V/7AH), CL12120 (12V/12AH), CL12400 (12V/40AH), CL12650 (12V/65AH) batteries or UL recognized BAZR2 batteries of an appropriate rating.
9. To trigger the power supply from a fire alarm control panel (FACP), connect signaling circuit of FACP to terminals marked Trigger End of Line Supervised.
10. To delay AC reporting for 2 hrs. set dip switch [AC Delay] to OFF position (Figure 2 - 1c).
11. To delay AC reporting for 1 min. set dip switch [AC Delay] to ON position (Figure 2 - 1c).

Note Must be set to ON position for Burglar Alarm Applications.

12. To enable Low Output Power Shutdown set dip switch [Shutdown] to ON position (Figure 2 - 1c).
13. To disable Low Output Power Shutdown set dip switch [Shutdown] to OFF position (Figure 2 - 1c).
14. Trigger terminals are end of a line resistor supervised (10k ohms). Opening or shorting trigger terminals will cause [DC] output to shutdown (Figure 2 - 1d).
15. Place a jumper for non-latching FACP. A momentary short on these terminals resets FACP latching [Trigger EOL Shutdown] (Figure 2 - 1e).
16. For Access Control Applications: mount UL Listed tamper switch (Sentrol model 3012 or equivalent) at the top of the enclosure. Slide tamper switch bracket onto the edge of the enclosure approx. 2" from the right side (Figure 4 or Figure 5). Connect tamper switch wiring to the Access Control Panel input or the appropriate UL Listed reporting device.

Wiring:

Use 18 AWG or larger for all low voltage power connections.

Note Take care to keep power-limited circuits separate from non power-limited wiring (120VAC, Battery).

Maintenance:

Unit should be tested at least once a year for the proper operation as follows:

Output Voltage Test: Under normal load conditions, the DC output voltage should be checked for proper voltage level PS161-6: 24VDC nominal rated @ 6 amp max.

Battery Test: Under normal load conditions check that the battery is fully charged, check specified voltage (24VDC @ 26.4) both at the battery terminal and at the board terminals marked [-- BAT +] to ensure that there is no break in the battery connection wires.

Note Maximum charging current under discharges is 1.54 amp.

Note Expected battery life is 5 years, however it is recommended changing batteries in 4 years or less if needed.

LED Diagnostics:

Power Supply/Charger

Red (DC)	Green (AC/AC1)	Power Supply Status
ON	ON	Normal operating condition.
ON	OFF	Loss of AC, Stand-by battery supplying power.
OFF	ON	No DC output.
OFF	OFF	Loss of AC. Discharged or no stand-by battery. No DC output.

Power Distribution Module

Green (AC)	Power Distribution Module Status
ON	Normal operating condition.
OFF	No Power Output.

Terminal Identification:

Power Supply/Charger

Terminal Legend	Function/Description
L, N	Connect 120VAC 60Hz to these terminals: L to hot, N to neutral (non power-limited) (Figure 2 - 1a).
- DC +	12VDC or 24VDC nominal @ 6 amp continuous output (non power-limited output) (Figure 2 - 1h).
Trigger EOL Supervised	Fire Alarm Interface trigger input from a short or FACP. Trigger inputs can be normally open, normally closed from an FACP output circuit (power-limited input) (Figure 2 - 1d).
NO, GND RESET	FACP interface latching or non-latching (power-limited) (Figure 2 - 1e).
+ AUX -	Auxiliary Power-Limited output rated @ 1 amp (unswitched) (power-limited output) (Figure 2 - 1f).
AC Fail NC, C, NO	Indicates loss of AC power, e.g. connect to audible device or alarm panel. Relay normally energized when AC power is present. Contact rating 1 amp @ 30VDC (power-limited) (Fig. 1b).

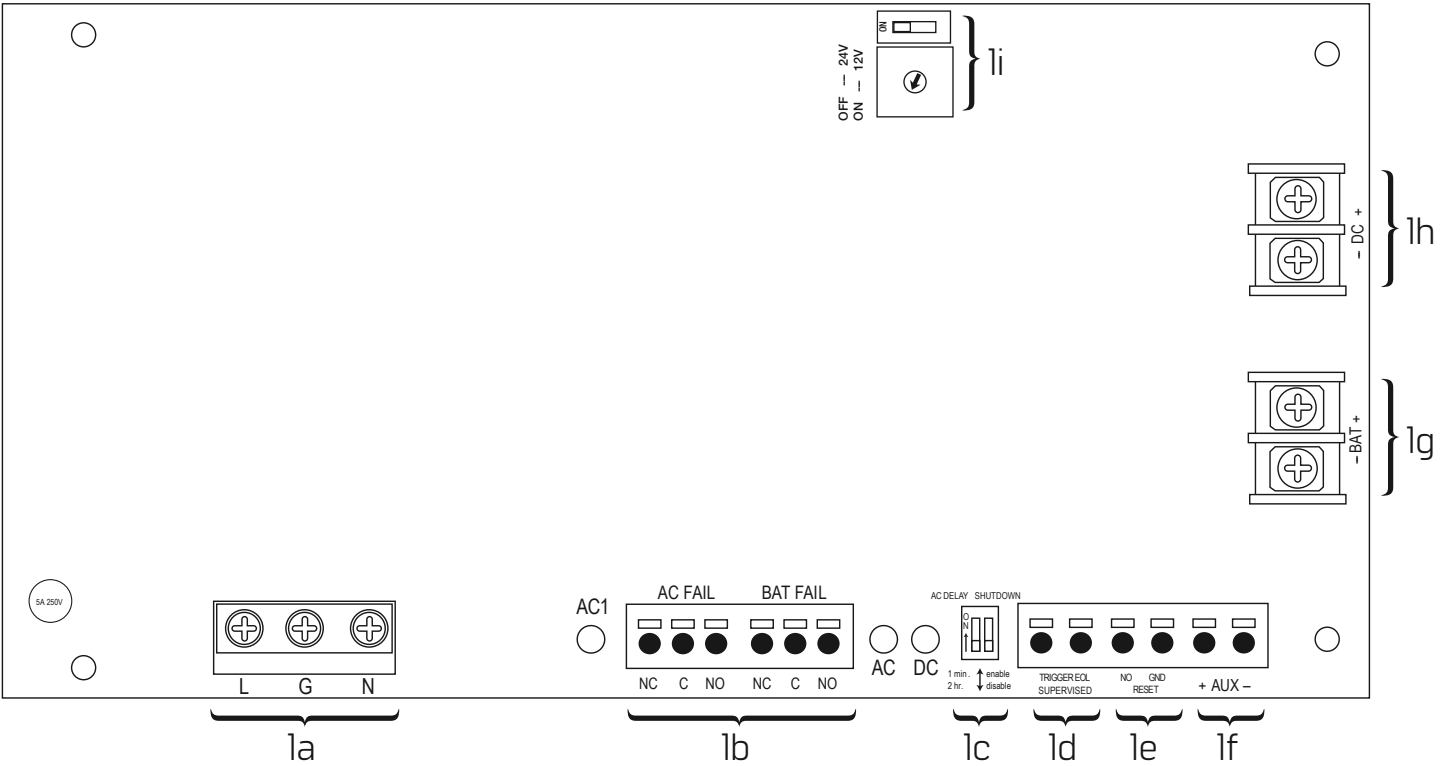
Bat Fail NC, C, NO	Indicates low battery condition, e.g. connect to alarm panel. Relay normally energized when DC power is present. Contact rating 1 amp @ 30VDC. A removed battery is reported within 5 minutes. Battery reconnection is reported within 1 minute (power-limited) (Figure 2 - 1b).
-BAT +	Stand-by battery connections. Maximum charge current 1.54 amp (non power-limited) (Figure 2 - 1g).

Terminal Identification:

Power Distribution Module

Terminal Legend	Function/Description
1P to 8P	Positive DC power outputs
1N to 8N	Negative DC power outputs

Figure 2 - PS161-6 Board configuration



Trouble/Time Limited Warning of Stand-by Batteries:

For compliance with ULC S318-96, the Time Limited Warning circuit must be connected for local or remote annunciation with an Amber or Red LED to indicate DC Trouble (low battery, loss of battery or when 95% of the stand-by battery has been depleted). Connect the circuit to the Batt Fail relay contacts to an appropriate input of a UL Listed Burglar Alarm or Access Control Panel. The following figure shows the circuitry needed for local annunciation.

Figure 3 - Battery trouble indication

For Canadian use, a red indicating lamp must be visible from the exterior of this enclosure. Wire one leg of a UL Listed, power-limited power source to the indicating lamp. Wire the second leg of the power source to the indicating lamp in series with the battery fail relay contact terminals marked [BAT FAIL - C, NO].

Power Distribution Module:

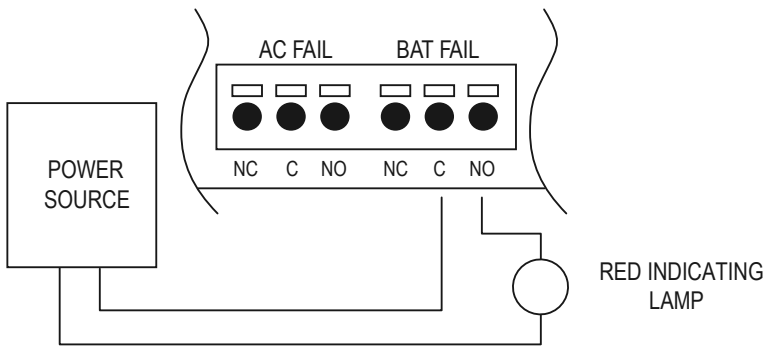


Figure 4 - PD8ULCB - Power Distribution Board
Power-Limited Outputs

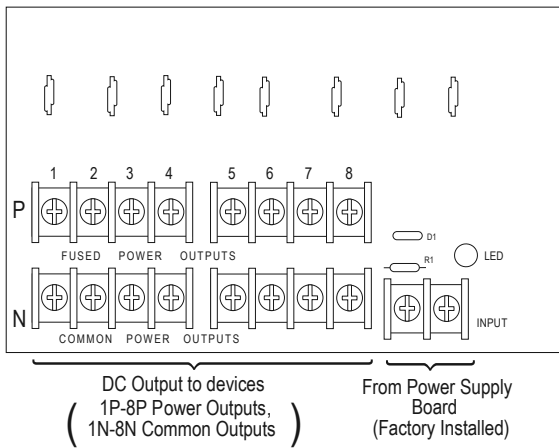
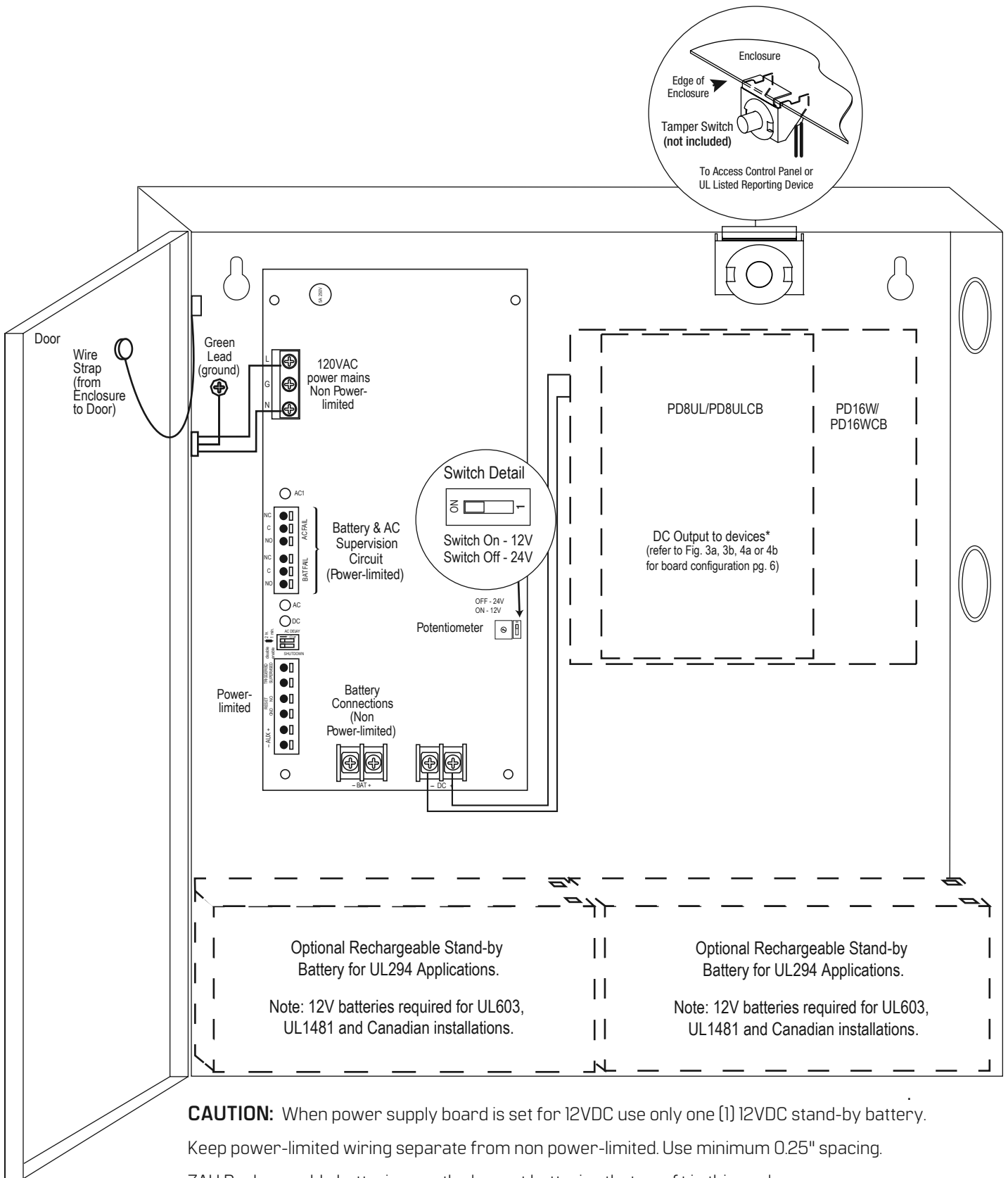


Figure 5

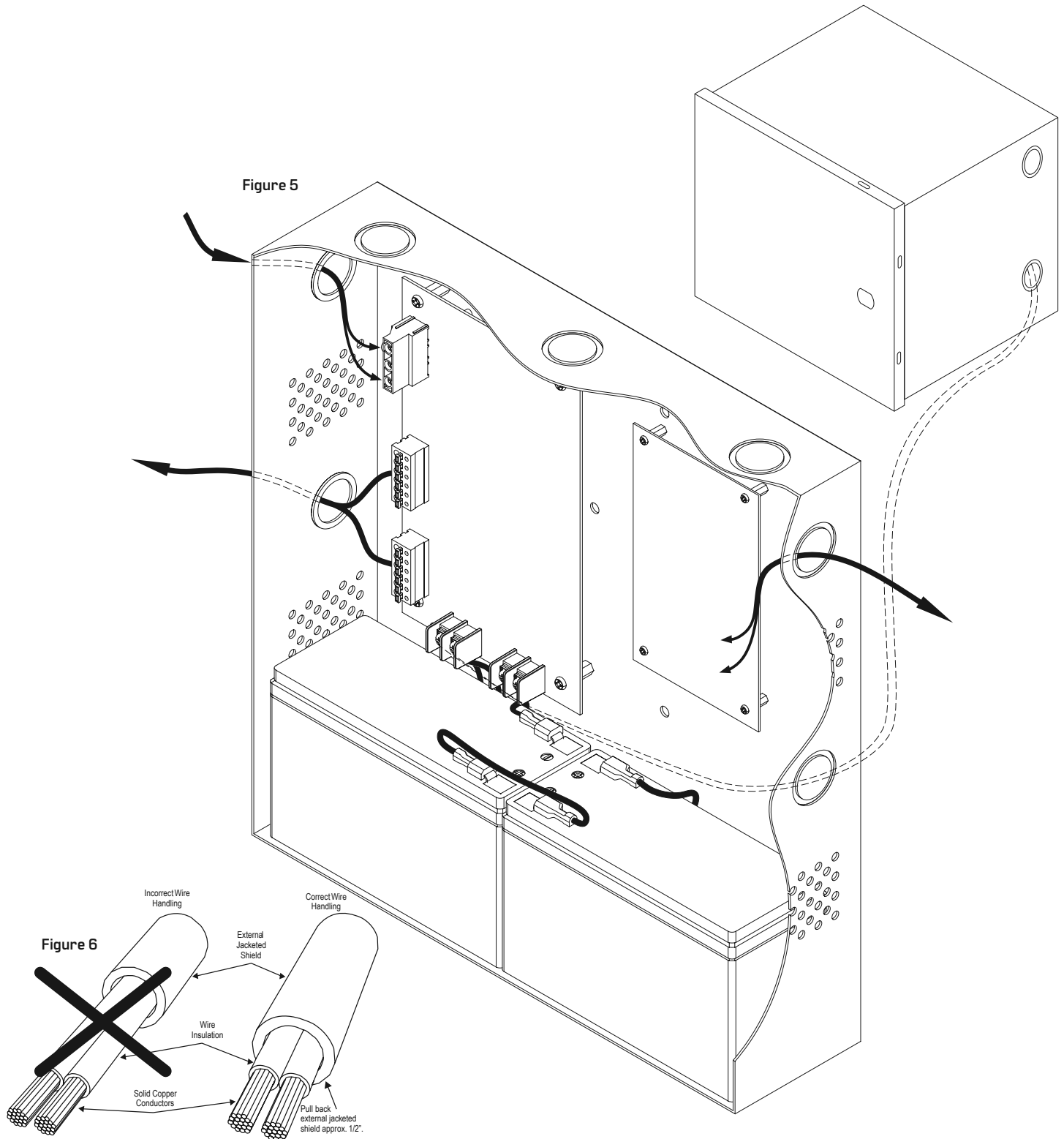


CAUTION: When power supply board is set for 12VDC use only one (1) 12VDC stand-by battery. Keep power-limited wiring separate from non power-limited. Use minimum 0.25" spacing. 7AH Rechargeable batteries are the largest batteries that can fit in this enclosure.

NEC Power-Limited Wiring Requirements:

Power-limited and non power-limited circuit wiring must remain separated in the cabinet. All power-limited circuit wiring must remain at least 0.25" away from any non power-limited circuit wiring. Furthermore, all power-limited circuit wiring and non power-limited circuit wiring must enter and exit the cabinet through different conduits. One such example of this is shown below. Your specific application may require different conduit knockouts to be used. Any conduit knockouts may be used. For power-limited applications, use of conduit is optional. All field wiring connections must be made employing suitable gauge CM or FPL jacketed wire (or equivalent substitute). Optional UL Listed battery enclosure must be mounted adjacent to the power supply via Class 1 wiring methods. For Canadian installations use shielded wiring for all connections.

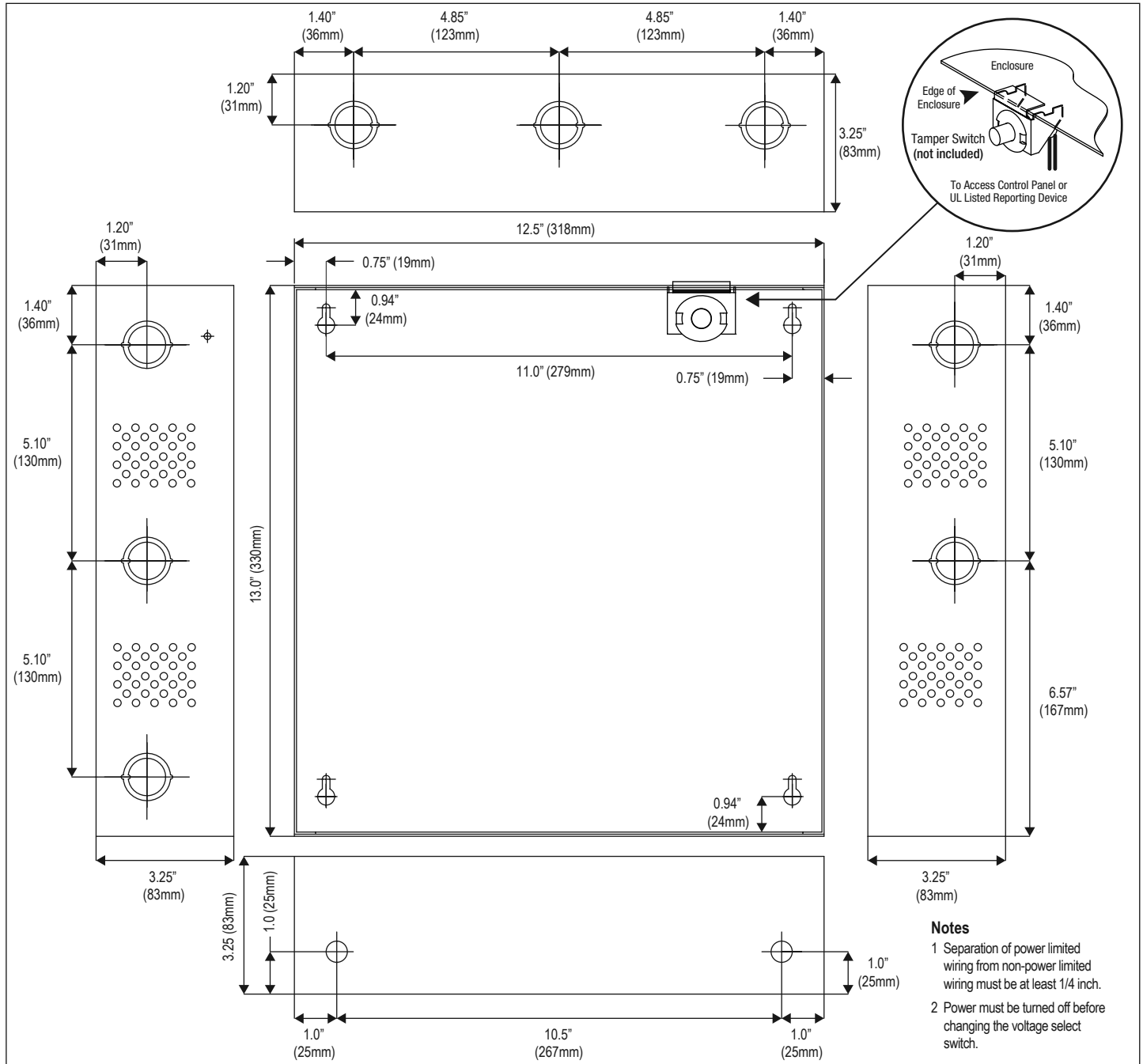
Note Refer to wire handling drawing below for the proper way to install the CM or FPL jacketed wire, [Figure 5].



Enclosure Dimensions:

12.5" x 13" x 3.25" [318mm x 330.2mm x 82.55mm]

Figure 7 - Power Supply Enclosure Template



Appendix A - UL Listed Compatible Devices

A.1 Four [4] Wire Smoke Detectors

Table A-1 below lists four [4] wire smoke detectors compatible with PS161-6 output.

System Sensor Smoke Detector/Base	Detector Type	Max Stand-by Current [mA]	Alarm Current [mA]
B112LP	Base	0.12	36
DH100ACDC	Photoelectric	0.15	0.70
DH100ACDCLP	Photoelectric	0.15	0.70
DH100ACDCLPW	Photoelectric	0.15	0.70
DH400ACDCI	Ionization Duct	25	95
DH400ACDCP	Photoelectric Duct	25	95
1112/24/D	Ionization	0.05	50
1424	Ionization	0.10	41
1451 [w/B402B Base]	Ionization	0.10	39
2112/24ATR	Photoelectric	0.50	60/70
2112/24AITR	Photoelectric	0.50	60/70
2112/24/D	Photoelectric	0.05	50
2112/24T/D	Photoelectric w/135o Thermal	0.05	50
2112/24TSRB	Photoelectric w/135o Thermal Supervisory Relay	15	45
2312/24TB	Photoelectric	0.12	50
2412 [12 volt]	Photoelectric	0.12	77
2424	Photoelectric	0.10	41
2451	Photoelectric	0.10	39
2451TH [with/B402B Base]	Photoelectric	0.10	39
2W-MOD	Loop Test/Maintenance Mod.	30	50
4W-B [12/24 volt]	Photoelectric I3	.05	23
4WT-B [12/24 volt]	Photoelectric I3 w/Therm	.05	23
4WTA-B [12/24 volt]	I3 Photo w/Therm/Sounder	.05	35
4WTR-B [12/24 volt]	I3 Photo w/Therm/Relay	.05	35
4WITAR-B [12/24 volt]	I3 Photo w/Isolated Therm/Sounder/Relay	.05	50
6424	Projected Beam	10	28.4
Beam 1224[S]	Projected Beam	17	38.5

A.2 Relays

Table A-2 below lists relays compatible with PS161-6 output.

Manufacturer	Model	Current [mA]	Manufacturer
System Sensor	EOLR-1	30	System Sensor

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Warning: This Manufacturer advises that no lock can provide complete security by itself. This lock may be defeated by forcible or technical means, or evaded by entry elsewhere on the property. No lock can substitute for caution, awareness of your environment, and common sense. Builder's hardware is available in multiple performance grades to suit the application. In order to enhance security and reduce risk, you should consult a qualified locksmith or other security professional.

Power Supply/Chargers Operating Guide

Input: 120VAC, 60Hz	Output		Auxiliary Power-Limited Output (unswitched)	Ripple Voltage
3.5 amp	12VDC	24VDC	1 amp	910mV
	6 amp	6 amp		

Overview:

The PS161-6 series power supply/chargers convert a 120VAC, 60Hz input, to a 12VDC or 24VDC output.

Stand-by Specifications

Battery	Burg. Applications 4hr. Stand-by/ 15 min Alarm	Fire Applications 24 hr. stand-by/ 5min. Alarm	Access Control Applications Stand-by
7AH	0.4 amp/6 amp	N/A	10 Mins./6 amp

Battery Backup:

- Built-in charger for sealed lead acid or gel type batteries.
- Maximum charge current 1.54 amp.
- Automatic switch over to stand-by battery when AC fails. Transfer to stand-by battery power is instantaneous with no interruption.

LED Diagnostics:

Red [DC]	Green [AC/AC1]	Power Supply Status
ON	ON	Normal operating condition.
ON	OFF	Loss of AC, Stand-by battery supplying power.
OFF	ON	No DC output.
OFF	OFF	Loss of AC. Discharged or no stand-by battery. No DC output.

Refer to the PS161-6 Power Supply Installation Instructions: 02140-11 REVE for complete instructions. This sheet is to be removed, framed and posted next to the unit.

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